To begin at the beginning, I think that, while so much effort and so much science have been expended, perhaps not very fructuously, in inquiries into the origin of man, too little systematic attention has been given to the radical differences between the modern man and modern animals. For instance, in the matter of speech no one can doubt that dogs and elephants and seals understand a great deal of language. One cannot see the individuals of a pack of hounds answer to their names without being satisfied that they not only attach a meaning to a few rude sounds, but can distinguish niceties and refinements of language. Again, we know that parrots and other creatures can speak our language; but I have never seen the question whether any one creature can both speak and understand thoroughly worked out. Has it been carefully and thoroughly ascertained whether any animals really cry or laugh? Sir John Lubbock and others have given attention to the question whether, in habitation-building, and the like, bees and ants exercise an intelligent discretion or follow one unvarying hereditary instinct; but I do not think any distinct conclusion has been arrived at. Can any monkey or other creature be educated up to the point of putting sticks on a fire and cooking chestnuts? I am afraid that on all these subjects there has been nothing but very desultory individual effort.

Then as regards man-breeding. Probably we have enough physiological knowledge to effect a vast improvement in the pairing of individuals of the same or allied races if we could only apply that knowledge to make fitting marriages, instead of giving way to foolish ideas about love and the tastes of young people, whom we can hardly trust to choose their own bonnets, much less to choose in a graver matter in which they are most likely to be influenced by frivolous prejudices. As I am not preaching I need say no more on that—all that I could say is self-evident. But when we come to the very important question of the crossing of races there is very great need of scientific observation and experiment. Both the general knowledge that we have of humans and the analogy of animals tends to show the great benefit of the crossing of breeds. Anglo-Saxon is an awkward term. I do not stop to inquire whether it represents two races; whether the peasant of the Lothians is an Englishman and the peasant of the south of England a Saxon, or why one is superior to the other; but using the word English for the Teutonic inhabitants of these islands I think one can hardly doubt that the English breed crossed with a dash of Celtic blood produces a better animal than either of the parent races. Witness the people of many parts of Scotland, of Ulster, and, I believe I may also say, of Cornwall. It is the use of the Celtic blood as an alloy that makes me specially unwilling to see Highlanders, and even wild Irishmen, exterminated from these islands. It may be worse for all of us if that comes to pass.

There is a popular belief that the cross between an Englishman and a Hindu produces a race inferior to either. I very much doubt the fact. Owing to the caste system (and it prevails with us almost as much as with the Hindus) half-castes are placed at a very great disadvantage, but I doubt if they are naturally inferior; at any rate, the question requires to be worked out. I think we have the means of doing so if we systematically went about it. So again as regards the cross-breeds between whites and Negroes. There is so much prejudice on the subject in the United States that it is very difficult to arrive at the truth. Some people think that the stimulating climate tends to make the white race in America wear itself out, and that (apart from the present great immigration from Europe) it would be a real improvement to the American race if the whites were crossed with the more phlegmatic blacks, say, in the porportion of six or eight of white to one of black, which now exists in the States. However, that is their affair, but a very important question for them.

And this brings me to the effect of climate. Is it the fact that in course of generations settled in America the climate alters the British race—or perhaps I should say European races? What is the tendency of the very peculiar Australian climate? It has passed into a popular proverb that the European race cannot survive in India beyond the second or third generation; and the result of that belief has been of enormous practical importance, for no sort of colonisation has been attempted. Yet I wholly doubt if the belief can be supported by any facts whatever; it is one of those things that are universally believed because they have never been tried, and therefore cannot be contradicted. Till little more than fifty years ago Europeans were not allowed to settle in India. To this day opportunities for education and good up-bringing are very much wanting—the surroundings are most unfavourable to European children; yet a good many instances could now be quoted of Europeans brought up in India who are physically just as good as their parents. The mortality in the European orphan asylums is extraordinarily low. It is not at all certain that the race might not be adapted to the climate, especially as the cool hill regions are those least occupied by the natives, and most fit for many lucrative industries introduced by Europeans.

Coming to physical and mental education, I have already alluded to some of the subjects which urgently require attention, the most important of which is, I think, the effect of what we call civilised life, and especially urban life. It is impossible to see the crowded and inferior dwellings in which so vast a population live in towns, without room for the gardens which their fathers had, and without the space and recreations natural to man, and not to fear for the result on the race. I might also say more on the question of physical education and on that of a mental education so general as to leave no mere primitive jungle plants as a stock on which to graft improved varieties; a subject which is already engaging anxious attention. On many other questions to which I have briefly alluded I might enlarge, but I have detained you so long that I think you would prefer to get to business; and so I will conclude by recommending practical anthropology to your earnest attention.

NOTES

WE have received the programme of the Finsbury Technical College for the session 1886–87. There is no change in the curriculum calling for remark.

ON September 3 a banquet took place in Bologna to celebrate the 100th anniversary of the discovery of animal electricity in that city by Galvani.

THE *Bund* announces that Prof. Forel, of Morges, in the Canton of Vaud, has discovered a natural gallery which goes right across the lower portion of the glacier of Arolla, in the Eringerthal, in the Valais. It constitutes a natural grotto in the heart of the glacier, and was explored to a distance of 250 metres (273 yards) by the Professor and some fellow-members of the Swiss Alpine Club from Geneva, Neuchatel, and the Canton of Vaud. The average width was from 6 to 10 metres, broadening out here and there to fully 25 metres; the height varied from 2 to 3 metres. At the spot where the party stopped, the cavern divided into two galleries, the exploration of which they reserved for another time. The glacier was found to rest direct on the ground.

ACCORDING to a Kimberley journal, Dr. Holub's exploration party is making but little progress. The whole of the party had been down with the fever, which has been severe this year in the Zambezi region.

THE captain of the steamer *Ardangorm* officially reports at Malta that at 1 p.m. on August 30, in clear, calm weather, when about 14 miles north of Galita, a small island between Sardinia and Tunis, he noticed that the eastern and highest peak of the island appeared to be in eruption, while smoke resembling that ascending from Mount Etna was ejected at intervals from the crater.

THE *Pioneer* of Allahabad states that news dated last April has been received from Mr. Carey, who is travelling from Leh towards China. He was then at Lob Nor. His course from Leh was south-eastward into Western Tibet, and then due north to Khotan, whence he made the Tarim River. After an excursion northwards towards the Baba Kul Lake he returned to the Tarim River, and followed it to Lob Nor. He is said to have probably entered Northern China before now.

ONE of the projects formed by M. Paul Bert before leaving France as Resident-General in Tonquin and Annam, was the formation of an Academy similar to that planned by Napoleon I. for Egypt. M. Bert has now issued a decree establishing the "Tonquinese Academy." The preamble sets out that it is desirable to revive in the country, which has been disturbed for so long a time, the taste for literature and science, and to preserve to the people the vestiges of its glorious past; as well as to collect the scattered evidences of its ancient splendour. The decree then goes on to provide that the seat of the Academy shall be at Hanoi, and that its functions shall be to investigate and collect everything of interest, from any point of view, relating to Tonquin, to preserve ancient monuments, to initiate the people into the knowledge of modern sciences and civilisation, by translating and publishing in the Annamite language *résumés* of European works, to translate into French extracts from the more important dynastic annals of Tonquin, as well as other works to be selected by a Commission, to aid in forming public libraries in the principal towns, and a national library at Hanoi, to publish a monthly bulletin in which scientific and other questions shall be treated, and to put itself in relations with other Oriental Societies in Europe and Asia. The Academy is to consist of forty members and an unlimited number of correspondents. The dignity of *Ham-lam* is to be conferred by the Resident-General. Various degrees are to be given to Tonquinese, and these are to be marked by a medal or emblem to be worn on the dress. Political questions are not to be discussed.

WE regret to learn that difficulties arising out of the reorganisation of the Imperial College of Engineering, Tokio, have resulted in the loss to the new University of Japan of the services of Prof. T. Alexander.

MR. R. JASPER MORE, writing to the *Times*, from the House of Commons, on the subject of "Science for the Masses," inquires why some of the 600 papers which are not read before the British Association should not be delivered as lectures at the schools or public rooms of the West Midland district, where "large and appreciative audiences would have been found, and a foundation laid for the objects of the British Association." "A few words spoken," he says, "in a familiar manner to working-men and others by members of the British Association would tend to make that taste for natural science the absence of which Sir John Lubbock deplores."

AT the last meeting of the Entomological Society of London, on the 1st inst., Mr. C. O. Waterhouse called attention to the various reports which had lately appeared in the newspapers of the discovery of the Hessian Fly (*Cecidomyia destructor*) in Britain, and inquired whether any communication on the subject had reached the Society. The Rev. W. W. Fowler stated that he had been in communication with Miss Ormerod on the subject, and that she had informed him that neither the imago nor larva of the species had been seen, and that the identity of the species rested on the supposed discovery of the pupa.

PROF. BRUN has published in the *Archives de Genève* an interesting study on the so-called lightning holes to be found in the High Alps. He and other investigators have found them at heights of from 3348 to 4000 metres, or between 11,000 and 13,000 feet above the sea-level. Usually they are found on summits. Sometimes the rocky mass, which has been vitrified in the passage of the electric fluid, presents the appearance of small scattered pearls, sometimes of a series of semi-spherical cavities only a few millimetres in diameter. Sometimes there are vitrified rays going out from a central point to a distance of 4 or 5 inches. Sometimes a block detached from the mass appears as if bored through by a cannon-ball, the hollowed passage being quite vitrified. The thickness of this vitrified coating or stratum never exceeds a millimetre, and is sometimes not more than the quarter of that depth. The varying colours which it presents depend on the qualities and composition of the rock. The same may be said as to its transparency. On the Rungfischhorn the glass thus formed by the lightning is black, owing to the quantity of actinolite which the rock contains. It is brown on La Ruinette, the rock consisting of feldspar mixed with gneiss containing chloride of iron. Under the microscope these lightning holes display many interior cavities, which must be attributed to the presence of water in the rock at the moment of melting by the electric discharge. This vitrified material has no influence on polarised light.

THE captain of the steamer *Thessaly*, belonging to the Houston Line, writing to the owners of that vessel, notes a strange experience on his last voyage from Liverpool to Monte Video. On Thursday, July 1, at 11.35 p.m., the ship, which at the time was in lat. 0° 55', long. 29° 34' W., was suddenly and violently shaken and bumped, the shaking being accompanied by a loud, rumbling, metallic kind of noise. The first impression was that the ship was tearing the bottom out over hard rock, but knowing there was nothing in the neighbourhood she could touch, save St. Paul's rocks, and as they could not see land, the captain concluded the machinery was going to pieces. A report received from the engine-room, however, stated that there was nothing wrong there. The engineer had slowed down instantly, under the impression that something had gone wrong. The carpenter reported the wells all free. The shock lasted about a minute; no disturbance was visible on the water. About 8 minutes after the first shock, a second, not quite so severe, stopped the ship, which in the meantime had been going slowly. Subsequently they experienced a third shock—a slight one. The lead indicated 60 fathoms with no bottom. Being now satisfied that the shocks were caused by some submarine disturbance, the captain proceeded on his course. After steaming about 15 minutes, he experienced a fourth shock, only inferior to the first in severity and duration. After this all was quiet. During the shocks the compass cards were much agitated.

WE have received a pamphlet by Prince Albert of Monaco describing the investigations which he has made during the past year in his yacht, the *Hirondelle*, into the Gulf Stream, and its relations with the coast of France. After referring to the interest which the Gulf Stream possesses for various branches of science, the Prince describes the knowledge of it possessed by the ancients, and the various investigations of modern times. The stream has been carefully studied by the Americans along their coasts, but our knowledge of it farther out in the Atlantic is more doubtful. Its influence on the French coasts has never been experimentally studied, and to this particular point the work on the *Hirondelle* was directed. 179 floats were thrown out at various places to the north-west of the Azores. These were of three classes—hollow copper balls, oak barrels, and ordinary bottles, there being ten balls, twenty casks, and 149 bottles. The various places of immersion formed a line about 170 miles in length. The conclusion which the Prince draws from the results so far is that as far as 300 miles to the north-north-west of the Azores, the Gulf Stream shows no tendency to flow towards the north-east, and even its tendency towards the east is scarcely pronounced. The pamphlet contains two charts, —one of the places of immersion of the floats, with the dates and hours, the other of the voyage of the *Hirondelle* from the time it left Lorient until its return.

THE session 1886 of the University College, Bristol, will begin on October 5. Lectures and classes are held every day and evening throughout the session. In the Chemical Department lectures and classes are given in all branches of theoretical chemistry, and instruction in practical chemistry is given daily in the chemical laboratory. Excursions to some of the mines, manufactories, and chemical works of the neighbourhood are occasionally made. The Department of Experimental Physics includes courses of lectures arranged progressively, and practical instruction in the physical and electrical laboratory. Those students who attend the mechanical engineering course enter engineering works during the six summer months, and, in accordance with this scheme, various manufacturing engineers in the neighbourhood have consented to receive students of the College into their offices and workshops as articled pupils; the engineering laboratory is provided with a powerful testing-machine, and instruction in the use of tools is given in the workshop. Special courses in surveying are given, and excursions for field practice are frequently made. The Department for Geology, Biology, and Zoology includes various courses of lectures in all branches of those subjects, together with laboratory instruction. In the Botanical Department practical instruction is given by means of the Botanical Gardens, which contain upwards of 1000 specimens.

THE additions to the Zoological Society's Gardens during the past week include a Common Mole (*Talpa europæa*), British, presented by Mr. J. Scatcherd; two Hawfinches (*Coccothraustes vulgaris*), British, presented by Mr. W. Strutt; a Lanner Falcon (*Falco lanarius*), European, received; two Common Vipers (*Vipera berus*), British, presented by Mr. W. Robertson; a Common Viper (*Vipera berus*), British, presented by Mr. W. H. B. Pain; two Common Marmosets (*Hapale jacchus*) from Brazil, three Indian Crocodiles (*Crocodilus palustris*) from India, deposited; a Mesopotamian Fallow Deer (*Dama mesopotamica*), four Long-fronted Gerbilles (*Gerbillus longifrons*), five American Milk-Snakes (*Coluber eximus*), an Argus Pheasant (*Argus giganteus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

CHANGES OBSERVED ON THE SURFACE OF MARS.—In the July number of the *Bulletin Astronomique* M. Perrotin gives a detailed account of his observations of Schiaparelli's "Canals" made during the months of April and May of the present year (NATURE, June 3, p. 110), remarking that their appearance differs little from that observed in the Milan astronomer's chart drawn in 1882, and that these markings appear to indicate the existence of a state of things, in the equatorial regions of the planet, which, if not absolutely permanent, at all events give evidence of considerable stability. But during the progress of the Nice observations of the "canals," some changes were noticed in the neighbourhood of the Kaiser Sea (Schiaparelli's Syrtis Major), which M. Perrotin has thought it worth while to put on record. During the earlier observations this part of the planet's surface was dark, like all the Martial "seas," and as it is represented in the chart. On May 21, however, the part of Syrtis Major extending from 10° to 55° of north latitude was seen to be covered with a luminous cloud forming regular and parallel bands, stretching from north-west to south-east on the surface, in colour somewhat similar to that of the continents, but not quite so bright. On the 22nd these cloud-like structures were more uniformly distributed than on the previous day; they were also seen on the three following days, but were noted to be of considerably diminished intensity. On May 25 the Nice observers noted the visibility of the isthmus which is placed in Schiaparelli's chart on the prolongation of Syrtis Major, below its junction with Nilus, in longitude 300° and north latitude 52°, and which had not hitherto been seen by them. M. Perrotin thinks it probable that these appearances are really due to clouds circulating in the atmosphere of Mars; at all events he concludes they arise from something connected with the atmosphere or with the surface of the planet capable of motion and of change in a comparatively short space of time.

A SUSPECTED NEW VARIABLE STAR.—In *Circular* No. 8 of the Liverpool Astronomical Society, Rev. T. E. Espin states that the star D.M. + 35° 4002 was observed by him on the night of June 26 last as a very red 8·5 mag. star. On August 29 it was again observed with the same comparison stars, and was found to be barely 9·5. There seems, therefore, reason for suspecting it of variation. Dunér calls this star "rouge-jaune foncé," spectrum III*b*. !!, and identifies it with Pickering No. 36 (*Astronomische Nachrichten*, No. 2376), which seems improbable, as Pickering's place is 1m. 20s. *preceding* and 0° 7′ *south*. The place of D.M. + 35° 4002 for 1885 is R.A. 20h. 6m. 3s., Decl. + 35° 36′·1.

THE BINARY STAR OΣ 234.—In the *Astronomische Nachrichten*, No. 2743, Mr. J. E. Gore publishes elliptic elements of the orbit of this binary. The components are of magnitudes 7 and 7·4, and the star has always been a close and difficult object to measure even with large telescopes. Mr. Gore considers his orbit as provisional only, on account of the discordance of some of the recorded measures. The following are the elements:—

$P = 63{\cdot}45$ years
$T = 1881{\cdot}15$
$e = 0{\cdot}3629$
$\gamma = 47^\circ\ 21'$

$\Omega = 124^\circ\ 11'$ (1880·0)
$\lambda = 71^\circ\ 58'$
$\alpha = 0''{\cdot}339$
$\mu = +\ 5^\circ{\cdot}67$

Mr. Gore states that these elements satisfy the observations fairly well from 1844 to 1853, and from 1870 to 1880, but in the years 1858–66 the discordances are considerable. The position of the star for 1880·0 is R.A. 11h. 24m. 20s., Decl. + 41° 58′.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 *SEPTEMBER* 12–18

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on September 12

Sun rises, 5h. 31m.; souths, 11h. 56m. 11·0s.; sets, 18h. 21m.; decl. on meridian, 4° 7′ N.: Sidereal Time at Sunset, 17h. 48m.

Moon (Full on September 13) rises, 18h. 8m.; souths, 23h. 38m.; sets, 5h. 16m.*; decl. on meridian, 6° 34′ S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian ° ′
Mercury	4 10	11 9	18 8	10 46 N.
Venus	3 30	10 40	17 50	12 53 N.
Mars	10 44	15 19	19 55	16 46 S.
Jupiter	17 27	13 15	19 3	3 9 S.
Saturn	23 58*	8 2	16 6	21 37 N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

Occultations of Stars by the Moon (not actually occulted at Greenwich)

Sept.	Star	Mag.	Disap. h. m.	Reap. h. m.	Corresponding angles from vertex to right for inverted image °	°
13	φ Aquarii	4½	1 50	near approach	227	—
13	24 Piscium	6½	20 33	near approach	168	—
16	ν Piscium	4½	7 12	near approach	56	—

Sept.	h.	
18	21	Venus at least distance from the Sun.

Variable Stars

Star	R.A. h. m.	Decl. ° ′		h. m.	
U Cephei	0 52·2	81 16 N.	Sept. 16,	19 25	*m*
Algol	3 0·8	40 31 N.	,, 14,	19 38	*m*
ζ Geminorum	6 57·4	20 44 N.	,, 13,	21 15	*M*
			18,	23 6	*m*
δ Libræ	14 54·9	8 4 S.	,, 14,	2 37	*m*
U Coronæ	15 13·6	32 4 N.	,, 15,	4 2	*m*
U Ophiuchi	17 10·8	1 20 N.	,, 12,	2 55	*m*
			and at intervals of	20 8	
β Lyræ	18 45·9	33 14 N.	Sept. 18,	21 0	*M*
η Aquilæ	19 46·7	0 43 N.	,, 13,	5 0	*M*
			,, 18,	0 0	*m*
δ Cephei	22 24·9	57 50 N.	,, 12,	5 0	*M*
			,, 15,	22 0	*m*

M signifies maximum; *m* minimum.